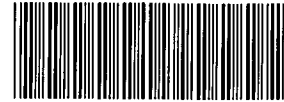




Rocky Mountain
Remediation Services, L.L.C.
... protecting the environment

Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, Colorado 80402-0464
Phone: (303) 966-2678
Fax: (303) 966-8244



000061000

CORRES. CONTROL
OUTGONG LTR NO.

February 6, 1996

96-RF-00834
96-RM-ER-0016-KH

DOE ORDER # *None*
96 RF 00834

DIST.	LTR	ENC
Bengal, P.		
Benson, C. A.		
Buddy, M. S.		
Evans, C. S.	X	X
Findley, M.		
Guinn, G.		
Guinn, L.		
Hopkins, J.	X	X
Jenkins, K.		
Jierree, C.		
Konwinski, G.		
Law, J. E.	X	X
Luker, R. S.		
McAnally, J. L.		
McHugh, M. F.		
Motyl, K. M.		
Parker, A. M.	X	X
Primrose, A. L.	X	X
Power, A.		
Schubbe, D. L.	X	X
Steffen, D. E.		
Tyson, A. M.		
Zeile, H.		
<i>O'Rourke, T</i>	X	X

Michael J. Peters
Kaiser-Hill, L.L.C.
Rocky Flats Environmental Technology Site
P. O. Box 464, Bldg. T130C
Golden, CO 80402-0464

REVIEW OF CONCEPTUAL DRAFT SCOPE OF WORK FOR ACCELERATED SITE ACTION PROJECT
PHASE III AND PHASE IV (KH00003NS1A) - JEL-021-96

Based on your direction during Accelerated Site Action Project (ASAP) planning meetings on January 22 and 29, 1996, Rocky Mountain Remediation Services, L.L.C. (RMRS) has prepared the attached conceptual draft scope of work for your review to support Environmental Restoration activities required to prepare ASAP III and ASAP IV documents.

Upon receipt of your comments, RMRS will finalize the scope of work, including cost estimates and schedules.

Please call John Hopkins on extension 4974 or myself if you have any questions on the attached scope of work or if you would like to set up a meeting to review the scope.

John E. Law, P.E.
Remediation Manager
Sitewide Actions

ER REC CTR (2)	X	X
RMRS CC	X	X
CORRES. CONTROL	X	X
TRAFFIC		

JH:dql

CLASSIFICATION		
UCNI		
UNCLASSIFIED	X	X
CONFIDENTIAL		
SECRET		

Attachment:
As Stated

cc:
J. Uhland - Kaiser-Hill

AUTHORIZED CLASSIFIER
SIGNATURE

DOCUMENT CLASSIFICATION

REVIEW WAIVER PER

CLASSIFICATION OFFICE

DATE

IN REPLY TO RFP CC NO:

NA

ACTION ITEM STATUS

☐ OPEN ☒ CLOSED

☐ PARTIAL

LTR APPROVALS:

22.015.F

ORIG & TYPIST INITIALS:

JH *gsl*



ADMIN RECCRD

SW-A-004201

**DRAFT
SCOPE OF WORK
FOR
ACCELERATED SITE ACTION PROJECT PHASE III
AND PHASE IV**



February 5, 1996

TABLE OF CONTENTS

1.0 Introduction	1
2.0 Refinement of Cap and Cover Design	1
3.0 Preliminary Design For Groundwater Remediation	2
4.0 Groundwater Modeling	3
5.0 Analysis of Vertical Migration Potential	4
6.0 Plutonium Migration in Groundwater	5
7.0 Watershed Improvements Plan	5
8.0 Surface Water Balance	6
9.0 Ecological Impacts	6
10.0 Waste Volume Balance for IHSS's	9
11.0 Environmental Monitoring	10
12.0 ASAP Phase III Report	11
13.0 ASAP Phase IV Support	11
14.0 Regulatory Negotiation/RFCA Support	12
15.0 Project Management/Support	13
16.0 Project Cost and Schedule	13

LIST OF FIGURES

1-1 Project Organization Chart
16-1 Project Schedule

LIST OF TABLES

16-1 Basis of Estimate

1.0 Introduction

This scope, schedule, and cost estimate was requested by Kaiser-Hill and stems from ongoing discussions with Kaiser-Hill staff on the tasks associated with developing a final closure plan for Rocky Flats. We believe that completion of the work outlined in this document will result in plans that are reasonable, technically defensible, and cost effective. In developing this scoping document, we have also incorporated recommendations from the ongoing Cleanup Work Group (DOE, EPA, CDPHE and the Kaiser-Hill team), as well as past work performed by many of the same RMRS staff as part of ASAP II (Figure 1-1). ASAP Phase IV, which is the implementation phase of ASAP, will be initiated as part of this scope.

This document will be the basis for development of a Baseline Change Proposal for the ER ASAP work package. The work completed as part of this scope will also aid in developing FY 97 and FY 98 work packages.

2.0 Refinement of Cap and Cover Design

The purpose of this work is to further define the extent and conceptual design of caps and covers to be used as part of the final remediation. This work will refine ASAP quantities and cost estimates, as well as provide input to groundwater and surface-water analyses on future water balance, contaminant migration, and groundwater system design.

- Review soil vegetative cover designs used at RMA and other sites
- Develop criteria for locating caps, covers, and revegetation

6

- Develop general design criteria
- Develop conceptual drainage plan
- Estimate infiltration rates using the HELP model
- Develop conceptual level quantities
- Develop conceptual level cost estimates

The final product will be a white paper summarizing the criteria for cap designs, quantity and cost estimates, and GIS maps showing the extent and type of caps and covers proposed for use. Development of a final site-drainage plan showing actual contours and permitting more refined estimates of quantities and costs is not included in this scope.

3.0 Preliminary Design For Groundwater Remediation

The purpose of this work is to further define the extent, configuration, and cost of sitewide groundwater remediation at Rocky Flats. This work will be based on the conceptual plan for the Management and Remediation of Groundwater at RFETS, which will be completed by February 15, 1996. Conceptual remedial actions for the contaminant plumes in RFETS groundwater were developed for this document. However, a detailed analysis of the data available for each plume should be conducted to determine the most appropriate, effective, and cost efficient remedial action.

The following process is envisioned for each of the six groundwater contaminant plumes with concentrations greater than 100 x MCLs:

- Determine constituents requiring remediation
- Update and plot analytical data
- Refine understanding of contaminant sources

- Define hydrogeologic characteristics (velocity, flux, degradation potential, etc)
- Identify the influence of buildings, structures and utilities on plumes
- Define how final site closure structures will impact contaminant plumes
- Identify 2-3 most appropriate technologies that will effectively manage or remediate contaminant plume
- Compare selected technologies for appropriateness, implementability, effectiveness, cost efficiency (alternatives analysis)
- Recommend probable solutions for each plume
- Identify preliminary locations of remedies (if appropriate) using all available data

The final work product will be a white paper describing the work performed and the results of alternatives analyses. Development of decision documents and designs are not included as part of this scope.

4.0 Groundwater Modeling

Groundwater modeling will be based on existing RFETS-calibrated MODFLOW models. The existing models will be expanded to include an area and associated model grid appropriate to support Accelerated Site Action Project (ASAP) objectives. The expanded groundwater model will be calibrated to current conditions at the site.

Using the expanded groundwater model, a "base" groundwater model will be prepared to model future site conditions including:

- Alternative cap and cover configurations
- Upgradient groundwater diversion(s)
- General performance of alternative groundwater remediation systems
- Impacts of reduced recharge to groundwater from reduced site

8

populations, caps and covers

Peer review utilizing "best-in-class" professionals shall be performed at three points (i.e., Modeling Objectives Kickoff Meeting, Development of Input Parameters, and Model Results/Report Review) during the modeling effort. A brief report documenting the modeling effort and model results shall be prepared as a stand-alone document.

5.0 Analysis of Vertical Migration Potential

The impact of site closure on potential vertical migration of contaminants will be assessed. This work will include a review of general site hydrogeologic information and use of a simple analytical vertical flow model to evaluate the potential for, and rate of, vertical flow at the site. A white paper will be prepared summarizing the results of this analysis. This paper will include the following:

- Applicable geologic setting description
- Hydraulic properties of bedrock materials
- Model and modeling assumptions
- A description of the potential for contaminant migration
- The estimated rate of vertical migration
- Factors limiting vertical migration
- The potential for DNAPL migration

The white paper will be written to be understood by a non-technical audience, but provide enough technical information to be scientifically defensible. Peer review by "best-in-class" professionals will be obtained for the draft white paper.

6.0 Plutonium Migration in Groundwater

The purpose of this work is to determine the potential for plutonium and americium to migrate in Rocky Flats groundwater and possibly reach surface water. The first phase of this work will include a review of related studies and literature. This review will specifically include past site specific studies completed as part of Operable Unit 2/903 Pad RI/RFI. The potential for plutonium/americium migration out of concrete lined cells in the waste management facility and from capped areas shall also be assessed. The product of this work will be a technical memorandum summarizing past studies and existing literature. This technical memorandum will specifically address the likelihood of plutonium and americium migration in Rocky Flats groundwater and, if necessary, identify further steps needed. An independent peer review will be completed of both the literature and technical memorandum.

7.0 Watershed Improvements Plan

The purpose of this plan is to develop detailed cost estimates for watershed improvements recommended in the Pond Operations Plan for inclusion into FY97 and FY98 work packages. Implementation of these improvements will begin reduction of ambient levels of plutonium and americium in surface water to below the proposed standard of 0.15 pCi/l.

Cost estimates will be developed for pond operations through and following conversion to flow through operation. Costs for breaching existing dams will be developed.

8.0 Surface Water Balance

The purpose of this work is to estimate the quantity of surface water and groundwater that will flow to the A and B series ponds following site closure activities. This data will be used to perform a water balance on two end-state scenarios. The first scenario will assume that ponds A4 and B5 are the only ponds remaining following remediation and are maintained at current capacity. The second scenario will assume the following:

- All dams are removed to the 10% capacity elevation
- Ponds are backfilled to the dam crest
- Backfilled areas are planted with wetland vegetation

The water balance analyses will address changes in groundwater flux caused by physical changes at the site and will utilize representative monthly values of runoff estimated based on cover types and areas and historic precipitation records. The results of the water balance will be used to evaluate the capability of post closure inflows to support ponds for recreational/aesthetic use or wetlands without purchasing and delivery of supplemental water from outside sources.

The final work product will be a technical memorandum summarizing the methodology used and results of the water balance.

9.0 Ecological Impacts

Implementation of site closure activities will involve impacts to wetlands because there will be substantially reduced flows to the creeks after site closure activities have been

completed. Federal law and DOE regulations require that these wetland impacts be addressed prior to wetland disturbance. EPA policy has historically required DOE, RFFO to provide compensatory mitigation for wetland impacts prior to disturbance. Use of the existing ponds as compensatory mitigation sites has been proposed. Constructing wetlands in the pond sites may or may not provide advanced compensatory mitigation for ASAP, depending upon a number of factors. The timing of impacts and the suitability and availability of the ponds as mitigation sites will determine whether they can be used to provide the required compensatory mitigation.

A site wetland mitigation bank agreement is close to being signed that would allow some flexibility in addressing wetland impacts. However, it would only allow compensatory mitigation to be provided well in advance of wetland disturbance. It does not allow disturbance of wetlands prior to completion of compensatory mitigation.

The time and cost required to comply with wetland protection requirements could be greatly reduced by developing a comprehensive plan that addresses wetland impacts and mitigation on a sitewide basis. Successful implementation of the plan would provide compliance with federal wetland protection requirements, without additional negotiations and delays resulting from dealing with wetland impacts on a case by case basis.

This concept would be compatible with the imminent wetland banking agreement. In fact, the banking agreement would allow more flexibility in the timing of mitigation, since it could allow mitigation projects to be started in advance of disturbance. A comprehensive plan, such as a Special Area Management Plan, could have additional benefit in that it could allow compensatory mitigation to be deferred until after the wetlands are impacted. Approval by EPA may be required.

The activities to be conducted under this work element include:

- Evaluate regulatory requirements applicable to wetland compensatory mitigation for ASAP
- Determine timing of closure activities that will impact wetlands.
- Determine acres of wetland likely to be impacted by ASAP in order to determine the approximate acres of compensatory wetlands that will be needed.
- Determine when wetland compensatory mitigation sites will be available for wetland development.
- Determine whether compensatory mitigation for ASAP impacts to wetlands can be provided by using the wetland bank, or whether additional relief, such as a Special Area Management Plan (SAMP) is needed to address wetland impacts and compensatory mitigation.
- Determine how many acres of wetlands and what type of wetlands can be supported by the water budget estimate (Surface Water Balance) that may be available after site closure activities have been completed.

Further evaluate feasibility of wetland construction as way to eliminate existing ponds.

- Determine regulatory requirements that apply to wetland creation in existing ponds
- Complete conceptual design of wetlands in pond locations if appropriate

10.0 Waste Volume Balance for IHSS's

During the development of ASAP Phase II, waste volume estimates were developed for environmental restoration wastes, D&D generated waste material and for other waste volumes, such as historical RCRA generated waste. In order to efficiently plan for future waste disposition, a waste balance needs to be developed that will prioritize and schedule IHSS remediation to ensure that equipment and facilities are available to treat and dispose of the waste.

Activities to be included under this work element include:

- Refine ER waste volume estimates
- Refine D&D waste volumes
- Develop a plutonium concentration histogram by IHSS to determine estimated volumes of plutonium in the following ranges: 0.1 to 1 pCi/gm, 1 to 100 pCi/gm and greater than 100 pCi/gm.
- Define the waste end state for each waste form
- Estimate waste disposition costs
- Review of existing ER Priority List and prioritization criteria
- Modification of ER Priority List to increase integration with ASAP Phase III findings as well as RFCA requirements
- Develop proposed ER sequencing

- Evaluate SNM sequencing
- Evaluate D&D sequencing
- Identify potential budget constraints
- Develop proposed schedule
- Develop mass balance
- Develop proposed schedule for ER, D&D and other waste form generation

11.0 Environmental Monitoring

Groundwater monitoring is assumed to be an integral part of the ASAP process both during and after final remediation of the Site. This work will include scope, schedule and budget projections for routine groundwater monitoring, analysis and reporting and non-routine, activity specific monitoring and reporting. In addition, an estimate of the scope of well installation/replacement and abandonment activities will be addressed. The following tasks are envisioned for this activity:

- Generate a strawman estimate of projected costs for the three main activity periods under ASAP: Pre D&D Phase, D&D Phase, Post D&D phase. A simple, resource loaded spreadsheet will be provided with activities and costs.
- A white paper will be produced with more detailed analysis of schedule, scope and budget for monitoring activities. This document will address actual subtasks within the ASAP schedule and cover special monitoring/installation/abandonment activities associated with D&D, capping and post closure.

Two iterations of each of the above tasks are envisioned refinements to the original

estimate based on review and/or added information are assumed.

Surface water monitoring will also be an integral part of the ASAP process both during and after final remediation of the Site. This work will include scope, schedule and budget projections for routine NPDES/FFCA monitoring, event related monitoring, and activity specific monitoring and reporting. The following tasks are envisioned for these activities:

- Conceptual level estimate of projected costs for the three significant activity periods under ASAP. These include pre-D&D phase, D&D phase and post D&D phase. A simple, resource loaded spreadsheet will be provided with activities and costs.
- A detailed analysis of schedule, scope and budget for surface water monitoring activities. This analysis will address specific subtasks within the ASAP schedule and include special monitoring associated with buffer zone conversion.

12.0 ASAP Phase III Report

Technical memoranda will be provided to Kaiser-Hill as specified in the previous sections. In addition, RMRS personnel will assist Kaiser-Hill in drafting specific sections of the ASAP III document.

13.0 ASAP Phase IV Support

Technical support will be provided to Kaiser-Hill in developing and writing implementation plans for the period FY1997 through FY2002. The implementation plans requiring development include:

- Remediation of high risk areas in the inner buffer zone
- Remediation of low risk areas in the inner buffer zone
- Implementation of flow through conversion of ponds
- Demonstration of the effectiveness of groundwater technologies, including bench and pilot scale testing.
- Complete focused pre-remedial characterization of the Industrial Area

14.0 Regulatory Negotiation/RFCA Support

The purpose of this work is to provide RMRS support to Kaiser-Hill on an as-needed basis throughout continued negotiations with DOE, EPA and CDPHE. Support will continue through public presentation and comment on the site Vision and the RFCA.

Included in this work is the following:

- Participation of RMRS management and technical experts in the Cleanup Work Group
- Cost Estimating/Alternatives Analysis
- Standard setting support
- Cleanup Work Plan review and revision
- K-H public presentation support
- Coordination with the Cities (Broomfield, Westminster, Thornton and Northglenn) and community
- Support to hearings before the Colorado Water Quality Control Commission related to RFCA cleanup standards
- Production of GIS maps, figures and drawings in support of the above

15.0 Project Management/Support

Support is required in the areas of project management, central planning and budgets, procurement and quality assurance. The project manager has worked on ASAP Phase II and will continue to have direct technical input into ASAP Phase III as well as providing overall project management for RMRS. The central planning and budgets individual provides budgetary and scheduling functions to the ADS. Procurement will provide subcontract-assistance in obtaining first in class outside technical assistance for peer reviews. Quality Assurance provides a review of and records of technical reports to ensure compliance with the RFETS site-wide Quality Assurance Project Plan for CERCLA and RCRA.

16.0 Project Cost and Schedule

The estimated project cost is \$ _____. This estimate is based upon the activities, tasks and schedules presented in this document. Approximately _____ hours are RMRS labor and \$ _____ is subcontracted work for peer review and access to outside expertise. Detailed cost estimates are provided in Table 16-1. The proposed schedule is shown in Figure 16-1.

A number of schedule constraints have been provided by Kaiser-Hill. Approximately 30% of the project will be completed by March 31, 1996. This will include calibration of the MODFLO model. ASAP Phase III activities will be completed by May 31, 1996. ASAP Phase IV activities will be completed by September 31, 1996.